PHILIP DECROOS

3B MECHATRONICS UWATERLOO

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SKILLS

- Python, C++, C, JavaScript, HTML/CSS, C#, MATLAB, SQL, Splunk
- Git, Jira, Jenkins, Linux, FreeRTOS, TensorFlow, Kafka, Kubernetes, Docker, Azure DevOps, NI TestStand
- SolidWorks, Raspberry Pi, Arduino, STM32, PIC, DC motor drivers, Oscilloscopes, Multimeters, Soldering

EXPERIENCE

Firmware Integration Engineering Intern — Tesla / Sep 2023 - Dec 2023

- Built a cloud service that updates configurations for cars as needed during production, eliminating ~10 service requests per month (Python, Kafka, Kubernetes, Docker).
- Investigated hardware and firmware issues for new programs to fix them before the start of production (C, Linux, CAN, LIN).
- Automated the validation of changes to our vehicle diagnostics firmware code (Python).
- Updated production test processes and built Splunk dashboards to support the process engineering team.

Firmware Developer — Midnight Sun Solar Car Team / Feb 2023 - Sep 2023

- Wrote firmware for driver UI controls including steering, indicators, and cruise control (C, FreeRTOS).

Software Test Engineering Intern — Ansys / May 2023 - Aug 2023

- Built an analysis tool for the regression test suite, finding optimizations that reduced the required computing resources by ~$10,000/year (Python, Azure DevOps).
- Wrote a code coverage analysis tool that maps which code is used by which tests and helps diagnose problems causing failures and find gaps in test coverage (Python, Power BI, Azure DevOps).
- Validated and debugged issues with new features and UI improvements for Ansys System Coupling.

Software Engineering Intern — Ford / Sep 2022 - Dec 2022

- Built automation pipeline to automate our monthly software deployment process, eliminating 3 days of work per month (Python, Jenkins).
- Developed tests to validate device codes and addresses, eliminating serialization defects (C++, Linux).
- Wrote test fixture code to test vehicle hardware components during manufacturing (C#, NI TestStand).

Manufacturing Engineering Intern — Martinrea / Jan 2022 - Apr 2022

- Built a service to detect offline label printers in the factory and notify staff with automated emails (Python).
- Updated SCADA platform to support remote document viewing and uploading (Python, SQL).

PROJECTS

Computer Vision Self-Driving Car — GitHub

- Wrote self-driving software for a model car with an Nvidia Jetson Nano (Python, TensorFlow).
- Uses edge detection and a neural network to follow a path denoted by lines on either side.
- Designed, manufactured, and integrated the car's electromechanical system (SolidWorks).

Tic Tac Toe Neural Network — Try it / Video / GitHub

- Built a neural network from scratch and trained it to play Tic Tac Toe with 97.3% accuracy (Python).

Lunar Lander Game — Video / GitHub

- Made a video game in which the player navigates 10 moon landings (Python, Pygame).

EDUCATION

Bachelor's in Mechatronics Engineering — University of Waterloo / 2020 - 2025